

Interactive comment on “Characterization of non-photochemically formed oligomers from methylglyoxal: a pathway to produce secondary organic aerosol through cloud processing during night-time” by F. Yasmeen et al.

M.I. Guzman

mig@seas.harvard.edu

Received and published: 12 December 2009

General Comments

The manuscript presents ESI-MS results for laboratory simulations of dark cloud chemistry of methylglyoxal in the presence of mixtures of ammonium sulfate, sodium sulfate, and sulfuric acid. A key finding is that they only observed dark aldol condensations at pH=3.5 and below. For this reason I would substitute the word “non-photochemically”

C8279

in the title with the term “dark” or “thermal.” The results are of high relevance to the readers of ACP and should be published but some minor corrections are needed. I think it is critically to confirm that the observed oligomers are real, and not an artifact produced during the electrospray ionization because there was no chromatographic separation. Perhaps, a future similar study using acetonitrile instead of methanol would ensure there is no incorrect peak assignment due to cluster formation with the solvent.

Page 22995, lines 16-18: This issue has been recently touched in the literature by Rincon et al., 2009 and 2010) for another related dicarbonyl compound (pyruvic acid) in relation to the cycling of model organic aerosol matter during daytime and nighttime.

Page 22996, line 18 to Page 22997, line 2: Actually, there is also a pathway that has not being mentioned here, and should be considered for the final version of the paper: The direct photochemistry in the condensed phase as exemplified in Guzman et al. (2006).

Page 22999, lines 4-11: Rincon et al., (2010) shows that different ions have catalytic properties to promote aerosol formation in the condensed phase.

Figures 1, 2, and 6: These figures should include a blank for comparison (located, e.g., above each spectrum). Otherwise, it is impossible to visualize the changes observed before and after the reaction.

References

Rincon, A.G., Guzman, M.I., Hoffmann, M.R., and Colussi, A.J.: Thermo-chromism of Model Organic Aerosol Matter. *J. Phys. Chem. Lett.* 1, 368-373, doi:10.1021/jz900186e, 2010.

Rincon, A.G., Guzman, M.I., Hoffmann, M.R., and Colussi, A.J.: Optical absorptivity versus molecular composition of model organic aerosol matter, *J. Phys. Chem. A*, 113, 10512-10520, doi:10.1021/jp904644n, 2009.

Guzman, M.I., Hoffmann, M.R., and Colussi, A.J.: Photoinduced Oligomerization of C8280

Aqueous Pyruvic Acid, *J. Phys. Chem. A*, 110, 3619-3626, doi: 10.1021/jp056097z, 2006.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 9, 22993, 2009.

C8281